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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/620,462	07/20/2000	Jae-seong Shim	1293.1127/MDS	3797

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EXAMINER

HO, THOMAS M

ART UNIT	PAPER NUMBER
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2134

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/620,462

Applicant(s)

SHIM, JAE-SEONG

Examiner

Thomas M. Ho

Art Unit

2134

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-16,23-33,41-43 and 47-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7,9-16 and 23-33 is/are allowed.
- 6) ☒ Claim(s) 41-43 and 47-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/9/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-7, 9-16, 23-33, 41-43, 47-49 are pending.
2. Claims 1-7, 9-16, 23-33 are allowable.

Claim Objections

Claim 43 recites:

“A data scrambler for a high density optical recording and/or reproducing apparatus using an optical disc having error correction blocks each error correction block comprising sectors...”

The Examiner recommends a comma after “having error correction blocks” to clarify the preamble of claim 43.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-7, 9-16, 23-33 rejected under 35 U.S.C. 103(a) as being unpatentable over ECMA-267 120mm DVD Read Only Disk.

In reference to claim 41:

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) discloses a data scrambler for a high density optical recording and/or reproducing apparatus using an optical disc, comprising:

- A random data generator including serially arranged registers, which shift-store n bits and generate the random data, and use a total of n values as initial values, including a first initial value and register values, a first serial logic circuit having a plurality of logic gates, which exclusive-Ors outputs of a first group of the registers and feedbacks the random data to a least significant register, where the serially arranged registers are r14 down to r0, where the XOR operation is the exclusive OR operation as performed below, and the register is a feedback shift register. (Section 17)

ECMA 267 fails to explicitly disclose:

A second logic circuit which scrambles outputs of a second group of registers and input data and outputs scrambled data in units of bytes to the recording and/or reproducing apparatus.

However, the Examiner notes that a second logic circuit which scrambles outputs of a second group of registers as recited by Applicant is merely a repetition of what the claimed random data generator already performs.

ECMA 267 (Section 17, upper paragraph) states that “after 16 groups of 16 data frames, the sequence is repeated. Section 17, bottom text recites “The part of the initial value of r7 to r0 is taken out as scrambling byte s0.” After that, 8bit shift is repeated 2047 times...”

It is well known to those of ordinary skill in the art, that the addition of more hardware serves the advantage of speeding up computations, as the computational load can now be divided between more than one piece of hardware.

It would have been obvious to one of ordinary skill in the art to have a second logic circuit scrambling outputs of a second group of registers and input data, in order to hasten the speed at which the scrambling bytes can be produced in order to fulfill the 2047 times the scrambling computation must be repeated.

In reference to claim 42:

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) discloses the data scrambler of claim 41, wherein the optical disc has error correction blocks each error correction block comprising sectors, wherein:

- The random data generator adjusts the random data generation cycle of the random data based upon the size of each sector and a size of each error correction block. (Sections 17 & 18) Section 18, ECC blocks states that “an ECC block is formed by arranging 16 consecutive scrambled frames in an array of 192 rows of 172 bytes each) Thus, the random data generation, that is, the amount of random data(scrambled bits) that must be generated is dependent on the size of the sector and size of the ECC block.

In reference to claim 43:

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) discloses a data scrambler for a high density optical recording and/or reproducing apparatus using an optical disc having error correction blocks each error correction block comprising sectors, the data scrambler comprising:

- A scrambling circuit which scrambles the generated random data and outputs scrambled data in units of bytes. (Sections 17 & 18)

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) fails to disclose:

A random data generator which generates random data and adjusts a random data generation cycle of the generated random data based upon a data amount in an innermost circumference of the optical disc and the size of each sector and a size of each error correction block; (Sections 17 & 18)

The Examiner takes official notice that basing a random data generation cycle on innermost track was well known in the art at the time of invention.

For example, Matsui, US patent 5661707 (Column 6, lines 15-30) discloses an embodiment for a random data generation cycle where the cycle of the random data is based upon an amount in an innermost track of the optical disk, and the size of each sector and each error correction block.

One of the purposes of scrambling is to ensure that adjacent tracks are distinct from one another through the scrambling process. To ensure successful scrambling between the two tracks, it is necessary to take into account the size of the track. If one does not take into account the size of the track, it is possible that the track may not be successfully scrambled, but only partially scrambled.

It is inherent when recording data to an optical disk that the recorded data begin by recording the data to the innermost track.

It would have been obvious to one of ordinary skill in the art at the time of invention to generate random data and adjust a random data generation cycle of the generated random data based upon a data amount in an innermost circumference of the optical disc and the size of each sector and a size of each error correction block, so that when the optical disk is recorded to, the first tracks of the optical disk are successfully scrambled.

In reference to claim 47:

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) discloses a data scrambler comprising:

- A random data generator which generates the random data using 32 KB in order to scramble data having structure of 2KB for a sector or a data frame. (Sections 17 & 18)

- A scrambling circuit which scrambles the generated random data and outputs scrambled data in units of bytes. (Sections 17 & 18)

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) fails to disclose an embodiment where the ECC block is 64k in size. Rather it discloses an embodiment where the ECC block is approximately 32Kb in size (37856 bytes) (Section 19)

It would have been obvious to one of ordinary skill in the art at the time of invention to scramble and create 64k ECC blocks instead of 32k ECC blocks in order to scramble larger data tracks.

In reference to claim 48:

ECMA-267 120mm DVD Read Only Disk. (Sections 16-19) discloses the scrambler of claim 47, wherein the random data generator comprises:

- A 15-bit serial register r0 through r14 for generating the random data by shifting left synchronized with a clock input for scrambling; and (Sections 17 & 18)
- An exclusive OR gate for outputting an exclusive OR value exclusive-OR ing output from the higher-most register r14 and output from the lower register r10 to the lower-most register r0 (Sections 17 & 18)
- Wherein the scrambler includes an exclusive OR logic circuit which supplies the result of exclusive-ORing 1-byte input data D0 through D7 and each of the 8 outputs of the lower registers r0 through r7 after left-shifting the 15 bit register r0 through r14 8 times. (Sections 17 & 18)

Claim 49 is rejected for the same reasons as claim 47.

Conclusion

2. Any inquiry concerning this communication from the examiner should be directed to Thomas M Ho whose telephone number is (571)272-3835. The examiner can normally be reached on M-F from 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory A. Morse can be reached on (571)272-3838.

The Examiner may also be reached through email through Thomas.Ho6@uspto.gov

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-2100.

General Information/Receptionist Telephone: 571-272-2100 Fax: 571-273-8300

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TMH

September 24th, 2005

GREGORY MORSE
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